SYSTEM

Product Information

SC2-PRESTO • *CompactPCI*® Serial CPU Card

4th Generation Intel® Core™ Processor

Document No. 7046 • 3 March 2015

SC2-PRESTO

General

The SC2-PRESTO is a rich featured high performance 4HP/3U CompactPCI® Serial CPU board, equipped with a 4th generation Intel® Core™ mobile processor (Haswell dual- or quad-core). The SC2-PRESTO front panel is provided with two Gigabit Ethernet jacks, two USB 3.0 receptacles, and two mDP connectors, compliant with the DisplayPort 1.2 standard for Multi-Stream-Transport (MST). Local expansion mezzanine cards are available for additional I/O.

The SC2-PRESTO is equipped with up to 16GB Low Power RAM with ECC support. 8GB memory-down are provided for rugged applications, and another 8GB are available via the DDR3 ECC SO-DIMM socket. The on-board SATA 6G RAID controller allows for powerful mass storage solutions via the CompactPCI® Serial backplane. Low profile SSD mezzanine modules are available as on-board storage solution, in addition.

SC2-PRESTO

Feature Summary

General

- PICMG® CompactPCI® Serial (CPCI-S.0) CPU card
- Form factor single size Eurocard (board dimensions 100x1600mm^2)
- Mounting height 3U
- Front panel width 4HP (8HP/12HP assembly with optional mezzanine side card)
- Front panel I/O connectors for typical system configuration (2 x USB3, 2 x DisplayPort, 2 x GbE)
- Backplane communication via PCI Express® Gen3, SATA 6G, USB 3.0, Gigabit Ethernet
- Local mezzanine expansion option (side card), COTS and custom specific boards

Processor

- 4th Generation Intel® Core™ CPU Haswell (-Refresh) Mobile
- i7-4700EQ Processor 2.4/1.7GHz • 47W/37W TDP • Quad-Core • PCIe Gen 3
- i5-4400E Processor 2.7GHz • 37W TDP • Dual-Core • PCIe Gen 3
- i5-4422E Processor 1.8GHz • 25W TDP • Dual-Core • PCIe Gen 3
- *i5-4402E Processor 1.6GHz • 25W TDP • Dual-Core • PCIe Gen 3*
- i3-4110E Processor 2.4GHz • 25W TDP • Dual-Core • PCIe Gen 2
- *i3-4100E Processor 2.4GHz • 37W TDP • Dual-Core • PCIe Gen 2*
- i3-4112E Processor 1.8GHz • 25W TDP • Dual-Core • PCIe Gen 2
- *i3-4102E Processor 1.6GHz • 25W TDP • Dual-Core • PCIe Gen 2*
- Celeron 2000E Processor 2.2GHz • 37W TDP • Dual-Core • PCIe Gen 2
- Celeron 2002E Processor 1.5GHz • 25W TDP • Dual-Core • PCIe Gen 2

BIOS

- UEFI Phoenix® BIOS with ACPI
- Windows® and Linux supported (others on request)

Main Memory

- Integrated memory controller up to 16GB DDR3(L) 1600 +ECC
- DDR3(L) +ECC soldered memory up to 8GB
- DDR3(L) +ECC SO-DIMM memory module socket up to 8GB

Feature Summary

Graphics

- Integrated HD Graphics Engine, 3 symmetric independent displays
- Enhanced Media Processing, DX11.1, OpenCL 1.2, OpenGL 3.2, JPEG, MJPEG, MVC, SVC, MPEG-2
- Front panel: Dual Mini-DisplayPort (mDP) or single VGA connector option
- 3rd DisplayPort connector via mezzanine side card
- DisplayPort™ 1.2 Multi-Stream Transport (MST) - display daisy chaining
- Max Resolution 3200 x 2000 @60Hz (any DisplayPort), 1920 x 1200 (VGA)
- 4k x 2k @24Hz supported for Blu-ray playback
- Integrated audio

Chipset

- Intel® QM87 Lynx Point Platform Controller Hub (PCH)
- 8 x PCIe Gen2 5GT/s
- 6 x SATA 6G
- 10 x USB2, 4 x USB3
- LPC, Audio, Legacy

On-Board Building Blocks

- Additional on-board controllers, PCIe® based
- 3 x Gigabit Ethernet controllers Intel® I210IT
- 1 x Gigabit Ethernet PHY Intel® I217LM
- PCIe Gen2 packet switch 16-lane 16-port PLX 8618
- SATA 6G RAID controller Marvell® 88SE9230, ARM powered subsystem for host CPU offload

Security

- Trusted Platform Module (Option)
- TPM 2.0 for highest level of certified platform protection
- Infineon Optiga™ SLB 9665 cryptographic processor
- Conforming to TCG 2.0 specification
- Meets Microsoft Windows 8 boot time and performance criteria

Feature Summary

Front Panel I/O (4HP)

- 2 x Gigabit Ethernet RJ45 (1 = PCH & I217LM - iAMT, 2 = I210IT)
- 2 x DisplayPort (from processor integrated HD graphics engine, mDP style receptacles, optional cable connector retainer available)
- 2 x USB 3.0

CompactPCI® Serial Backplane Resources

- PICMG® CPCI-S.0 CPU card & system slot controller
- 16 x PCIe Gen3 8GT/s (2 links x 8 for two fat pipe slots, derived directly from the Intel® Core™ CPU
- 6 x PCIe Gen2 5GT/s (6 links x 1 for peripheral slots)
- 3 x SATA 6G (from PCH)
- 4 x SATA 6G (Marvell hardware RAID controller)
- 4 x USB2, 2 x USB3 (from PCH)
- 2 x Gigabit Ethernet (I210IT networking controllers)

Local Expansion

- Mezzanine side card connectors for optional local expansion
- P-EXP - 2 x USB 2.0 & Legacy (from PCH)
- P-DP3 - 3rd DisplayPort video (from Intel® Core™ CPU)
- P-HSE - 3 x SATA 6G & 4 x USB 2.0 (from PCH)
- P-PCIE - PCIe Gen2 5GT/s 1 link x 4 lanes (from on-board PCIe® switch)

- 4HP Low profile mezzanine module options
- CFast™ Card with C41-CFAST mezzanine module
- SATA 1.8-Inch Solid State Drive with C42-SATA mezzanine module
- Dual mSATA SSD with C47-MSATA mezzanine module
- Dual M.2/NGFF SATA SSD 2230 - 2280 size with C48-M2 mezzanine module
- Custom specific module design

- 8HP/12HP Mezzanine side card options
- SCS-TRUMPET - 3rd DisplayPort F/P connector, RS-232, 2 x USB3, on-board 2.5-Inch SATA SSD or 2 x M.2/NGFF SATA SSD module sockets 2230 - 2280
- Variety of other side cards available
- Custom specific side card design

Feature Summary

Environmental & Regulatory

- Suitable e.g. for industrial, transportation & instrumentation applications
- Designed & manufactured in Germany - ISO 9000 quality management certified
- Long term availability
- Rugged solution
- Coating, sealing, underfilling on request
- Lifetime application support
- RoHS compliant 2002/95/EC
- Operating temperature 0°C to +70°C
- Operating temperature -40°C to +85°C (industrial temperature range) on request
- Storage temperature -40°C to +85°C, max. gradient 5°C/min
- Humidity 5% ... 95% RH non condensing
- Altitude -300m ... +3000m
- Shock 15g 0.33ms, 6g 6ms
- Vibration 1g 5-2000Hz
- MTBF tbd
- EC Regulatory EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)

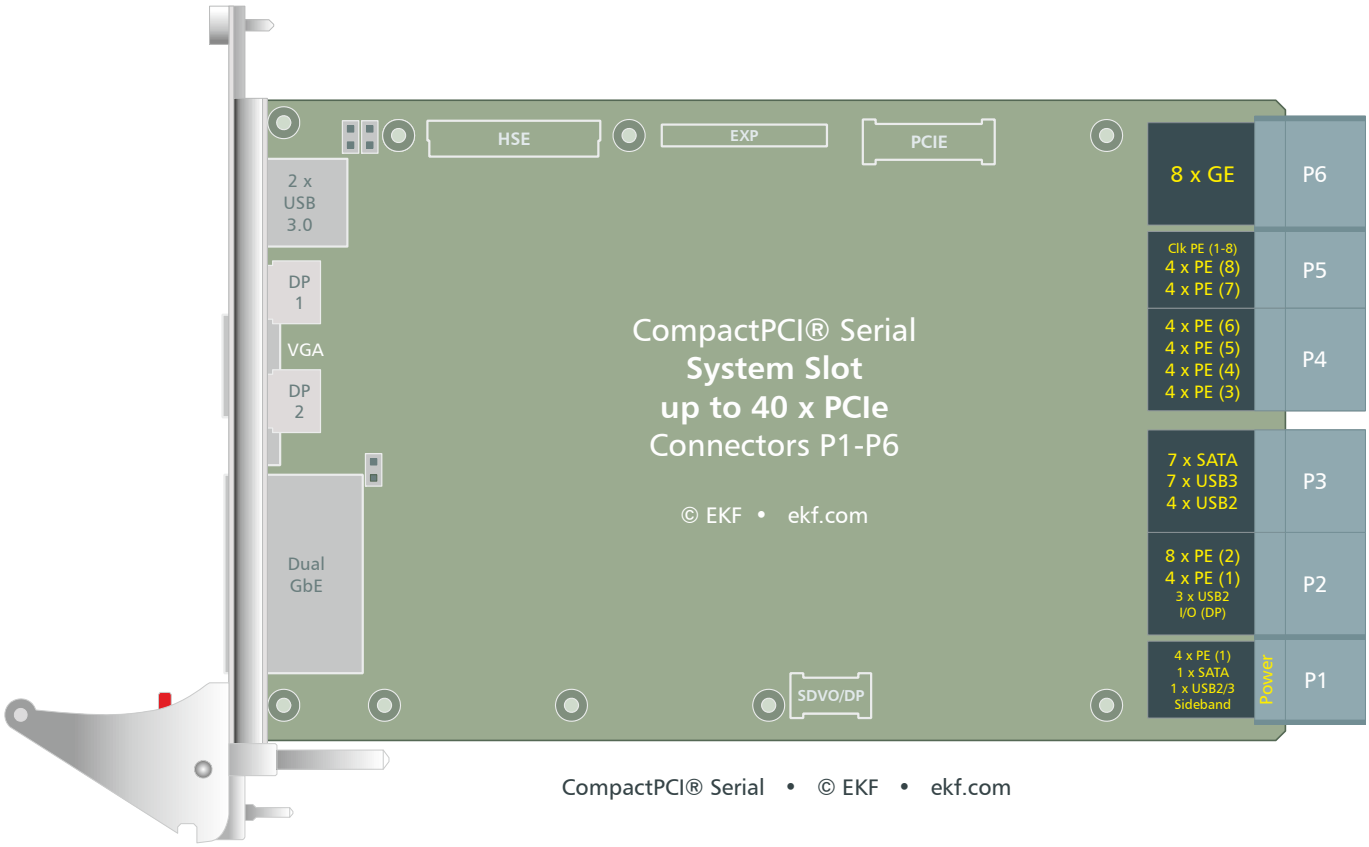
SC2-PRESTO

CompactPCI® Serial

While mechanically compliant to CompactPCI® Classic, CompactPCI® Serial (PICMG® CPCIS.0) defines a completely new card slot, based on PCI Express®, SATA, Gigabit Ethernet and USB serial data lines. Up to 6 high-speed backplane connectors P1 - P6 are provided on a system slot controller such as the SC2-PRESTO, which can be considered as a root hub with respect to most signal lines. A passive backplane is used for distribution of a defined subset of I/O channels from the system slot to each of up to eight peripheral slots in a CompactPCI® Serial system.

Most CompactPCI® Serial peripheral slot cards require only the backplane connector P1, which comprises PCIe, SATA and USB signals, resulting in a concise and inexpensive peripheral board design. More powerful peripheral cards profit from two so called Fat Pipe slots (PCIe x 8).

The SC2-PRESTO is a native CompactPCI® Serial CPU card, suitable for usage in a pure CPCI Serial environment. Due to its generous backplane capabilities (22 x PCI Express® lanes, 6 x USB, 7 x SATA/RAID, 2 x GbE), very powerful industrial systems can be built.



General Backplane Connector Assignment
According to PICMG® CPCI-S.0

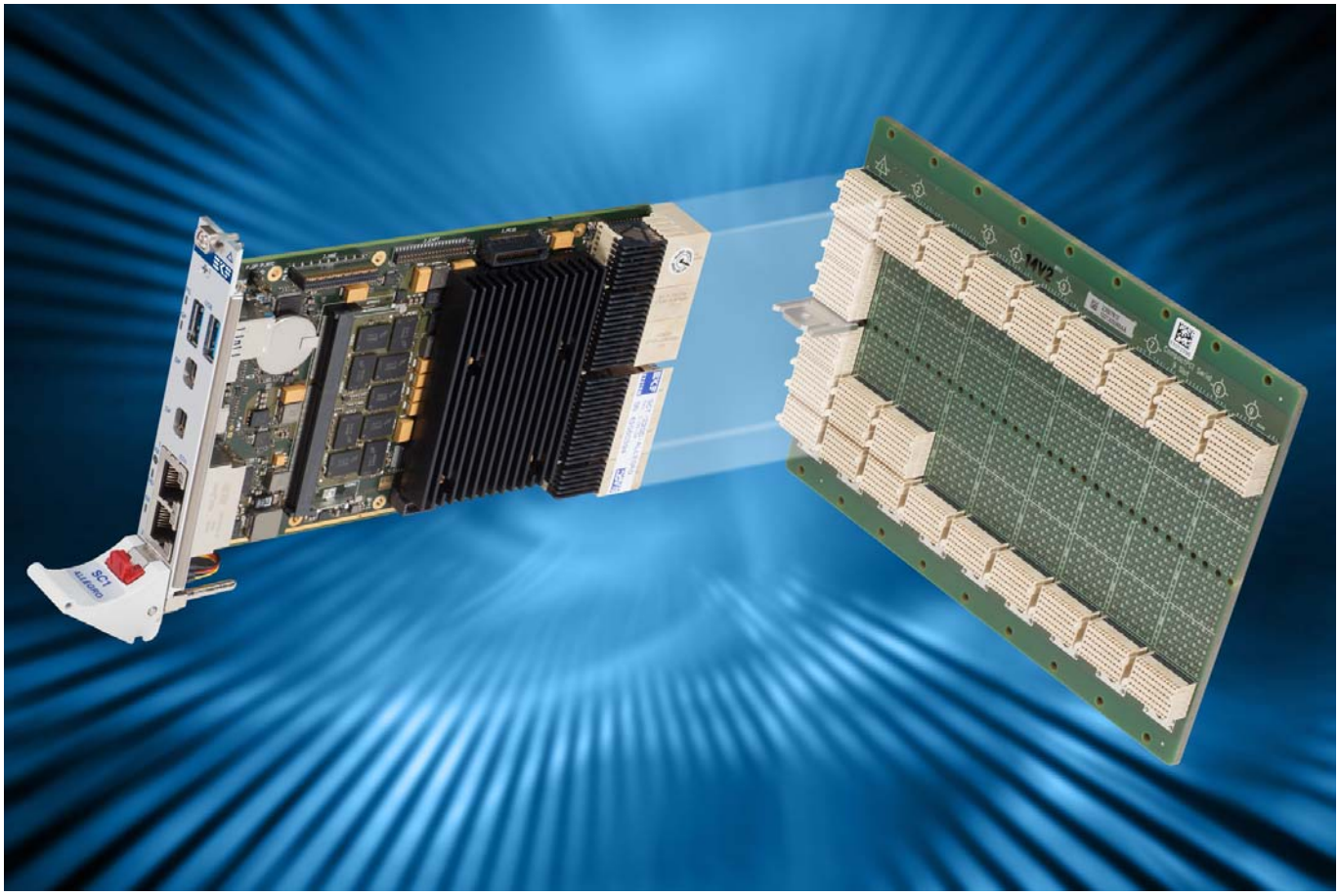
SC2-PRESTO R.1 • Resources w. 1+8 Slots Backplane (System Slot Left)

	P1	P2	P3	P4	P5	P6
SC2-PRESTO	PE Gen3 ½ x 8 (1) 1 x USB3 (1) Sideband	PE Gen3 x 8 (2) PE Gen3 ½ x 8 (1) 2 x USB2 (3-4) I/O	3 x SATA (PCH) 4 x SATA (RAID) 1 x USB3 (2) 2 x USB2 (5-6)	4 x PE (3-6) Gen2 4 Links x 1	Clk PE (1-8) 2 x PE (7-8) Gen2 2 Links x 1	GbE (1-2)
1 SYS						
2	PE Gen3 x 8 USB3			PER 1		GbE (1)
3	PE Gen3 x 8 SATA 3G (PCH) USB3			PER 2		GbE (2)
4	PE Gen2 x 1 SATA 6G (RAID) USB2			PER 3		
5	PE Gen2 x 1 SATA 6G (RAID) USB2			PER 4		
6	PE Gen2 x 1 SATA 6G (RAID) USB2			PER 5		
7	PE Gen2 x 1 SATA 6G (RAID) USB2			PER 6		
8	PE Gen2 x 1 SATA 6G (PCH)			PER 7		
9	PE Gen2 x 1 SATA 6G (PCH)			PER 8		
	Peripheral Slot	Fat Pipe Slot	Fat Pipe Slot	Peripheral Slot	Peripheral Slot	Peripheral Slot

© EKF • ekf.com

Backplane Resources SC2-PRESTO (System Slot Left)

www.ekf.com/s/sc2/img/sc2_backplane.pdf



8 + 1 Slots CompactPCI® Serial Backplane

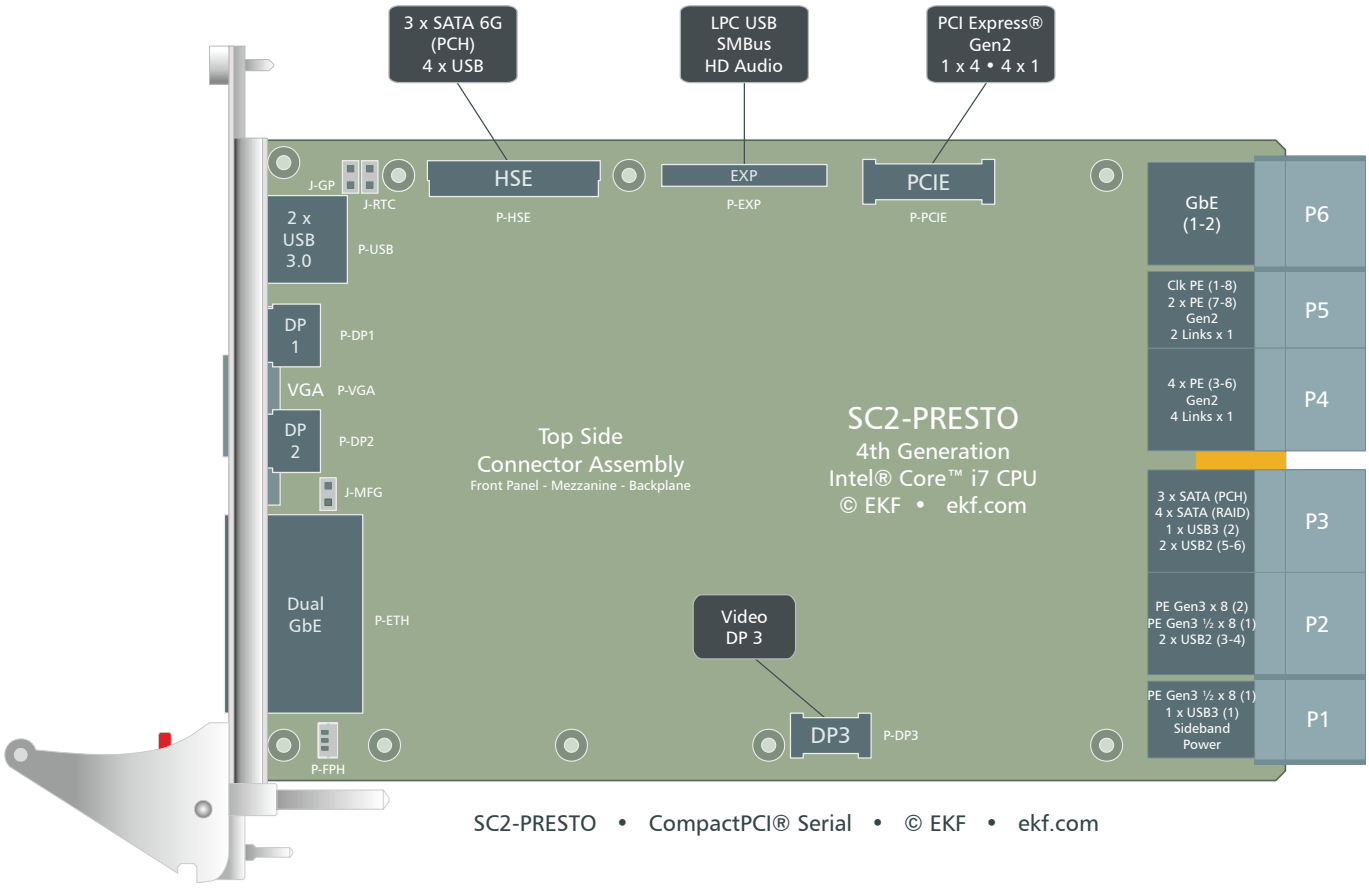
Related Information	
SC2-PRESTO Home	www.ekf.com/s/sc2/sc2.html
SC2-PRESTO User Guide	www.ekf.com/s/sc2/sc2_ug.pdf

General Information CompactPCI® PlusIO & CompactPCI® Serial	
CompactPCI® Serial Concise Overview	www.ekf.com/s/serial_concise.pdf
CompactPCI® Serial All You Need to Know	www.ekf.com/s/smart_solution.pdf
CompactPCI® Serial Home	www.ekf.com/s/serial.html
CompactPCI® PlusIO Home	www.ekf.com/p/plus.html

Local Expansion

The SC2-PRESTO is equipped with a set of high-speed local expansion interface connectors, which can be optionally used to attach a mezzanine side board. A variety of expansion cards is available, e.g. providing legacy I/O such as RS-232, and additional PCI Express® based I/O controllers such as SATA, USB 3.0 and Gigabit Ethernet, and also a third video output.

Most mezzanine side cards can accommodate in addition a 2.5-inch drive. Typically, the SC2-PRESTO and the related side card would come as a readily assembled 8HP unit. As an alternate, MicroSATA or mSATA SSD based low profile mezzanine mass-storage modules are available that fit into the SC2-PRESTO 4HP envelope.



SC2-PRESTO • Connector Assembly
www.ekf.com/s/sc2/img/sc2_draft_mezzanine.pdf

Related Documents Mezzanine Modules and Side Cards	
C4* Series Mezzanine Storage Modules	www.ekf.com/c/ccpu/c4x_mezz_ovw.pdf
SCS-TRUMPET Mezzanine Side Card	www.ekf.com/s/csc/scs.html

SC2-PRESTO w. SCS-TRUMPET Mezzanine Side Card 8HP Assembly

SC2-PRESTO w. C47-MSATA Mezzanine Module 4HP Assembly

C47-MSATA • Low Profile Dual-SSD Mezzanine Module

SC2-PRESTO w. C41-CFAST Mezzanine Module 4HP Assembly

SC2-PRESTO w. C42-SATA Mezzanine Module 4HP Assembly

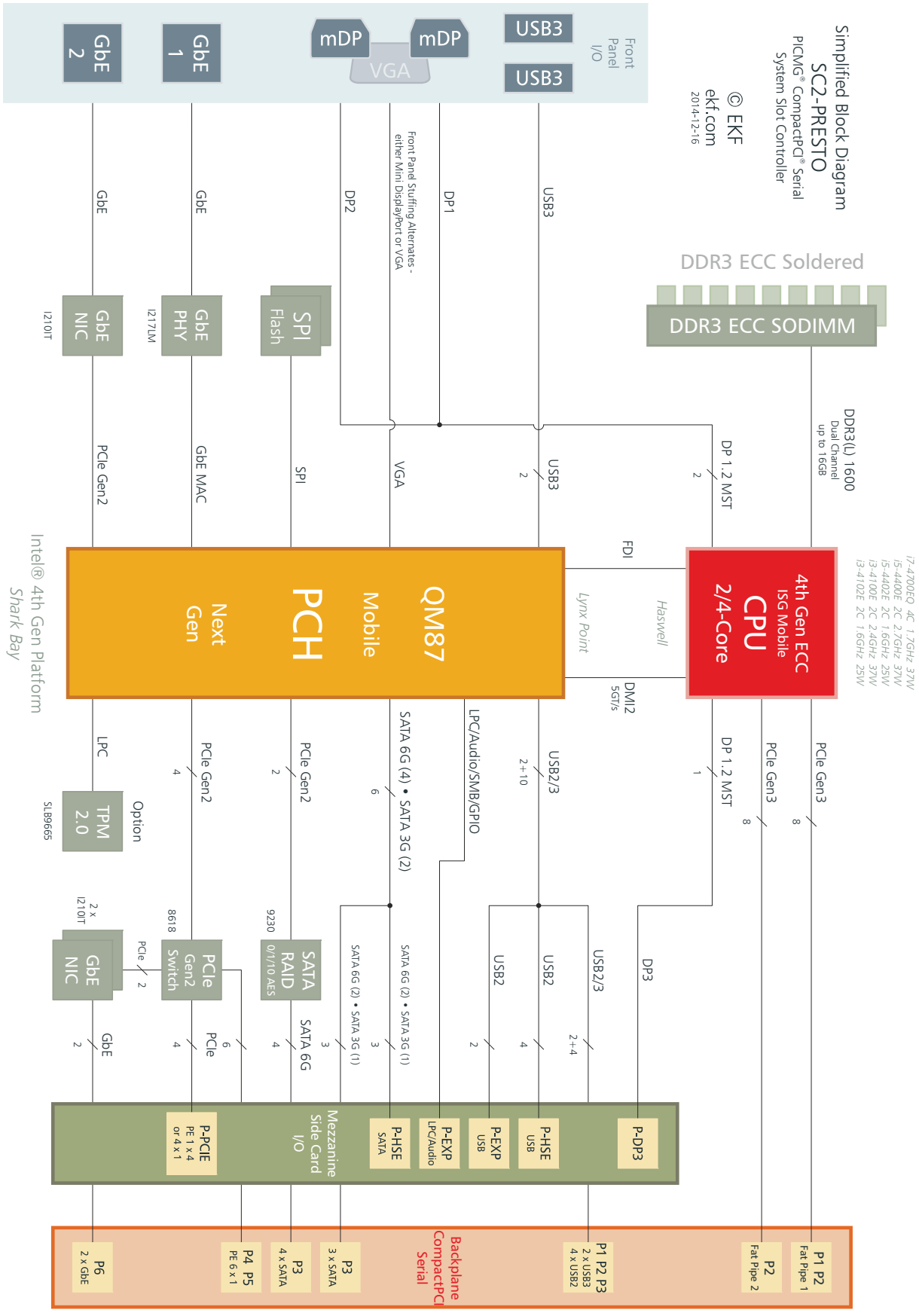
SC2-PRESTO w. C44-SATA Mezzanine Module 8HP Assembly

SC2-PRESTO w. C45-SATA Mezzanine Module 8HP Assembly

8HP Assembly w. PCS-BALLET Side Card & C42-SATA

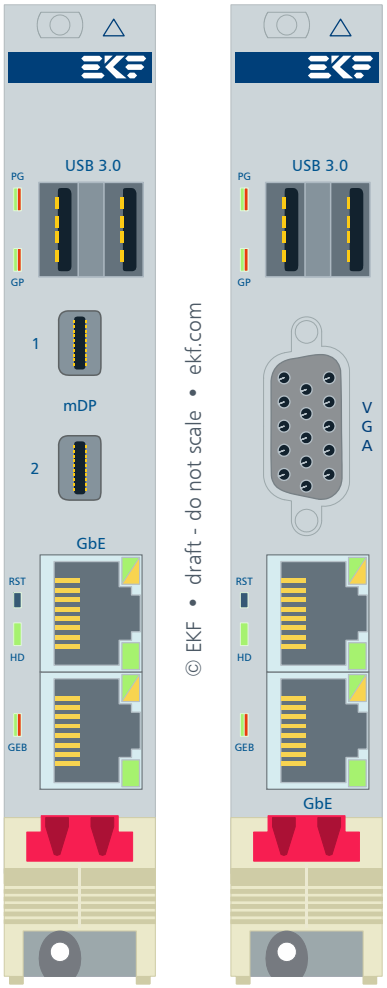
8HP Assembly w. PCS-BALLET Side Card & C47-MSATA

Block Diagram



www.ekf.com/s/sc2/img/sc2_blk.pdf

Front Panel Options



© EKF • draft - do not scale • ekf.com

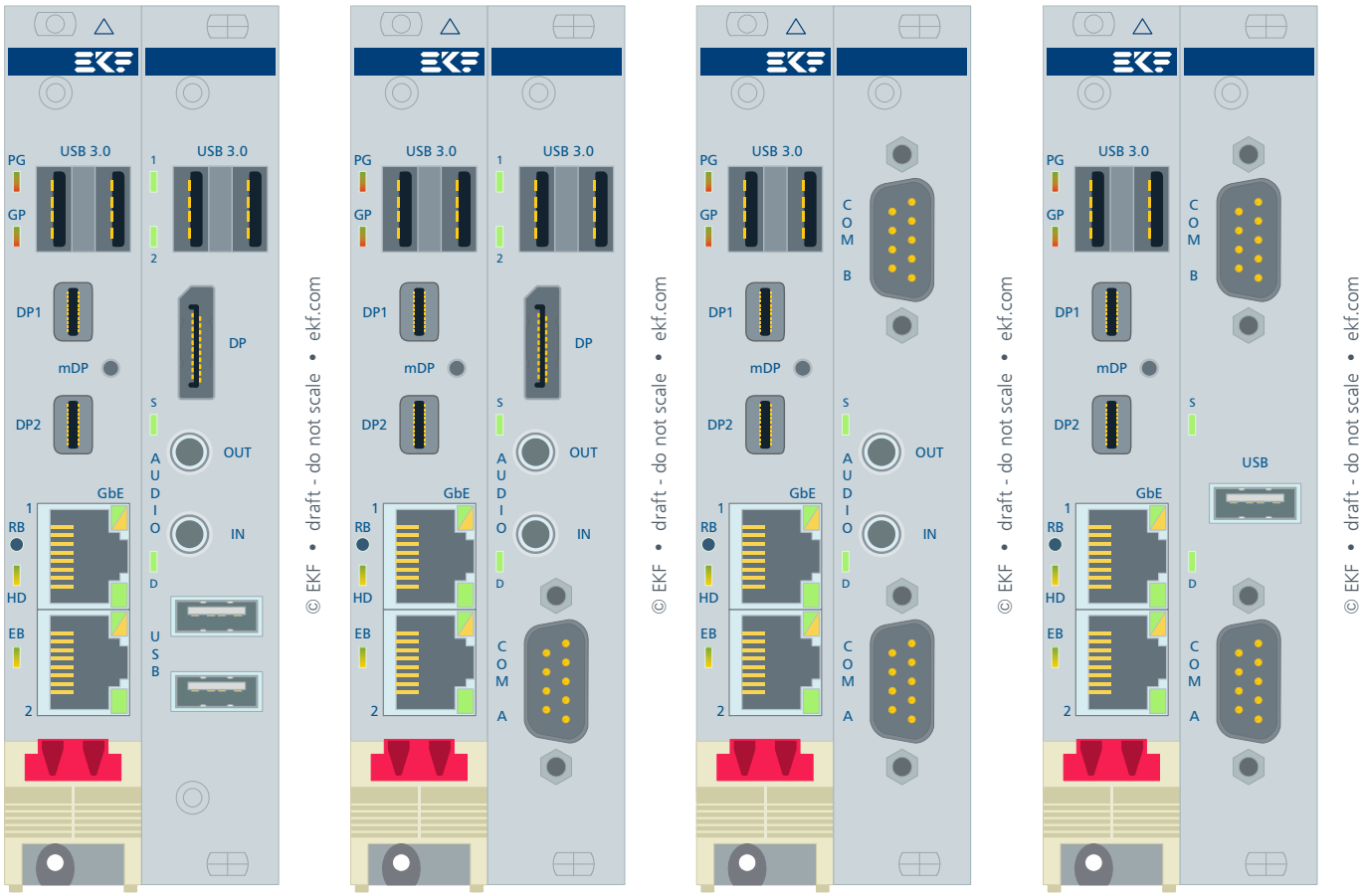
SC2-PRESTO
Dual - mDP

SC2-PRESTO
VGA

Option Screw-Locked mDP Cable Connectors

Sample Front Panel Options 8HP

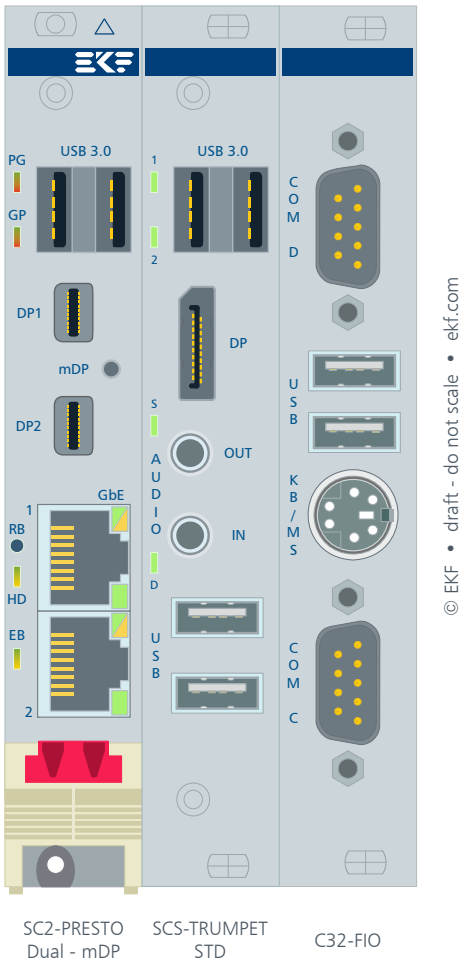
1 2 3 4



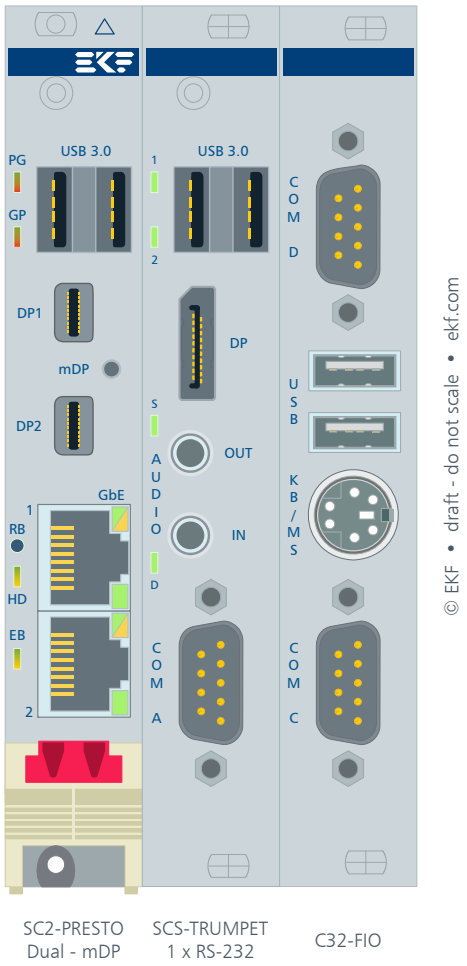
1. Typical assembly, dual-USB 3.0, DisplayPort, 3.5mm stereo audio in/out, 2 x USB 2.0
2. Bottom RS-232 male D-Sub 9-pin (COM-A) replaces two USB 2.0 jacks
3. Top RS-232 male D-Sub 9-pin (COM-B) replaces dual-USB 3.0 and DisplayPort connectors
4. Center USB 2.0 receptacle replaces both 3.5mm stereo audio jacks

Sample Front Panel Options 12HP

5

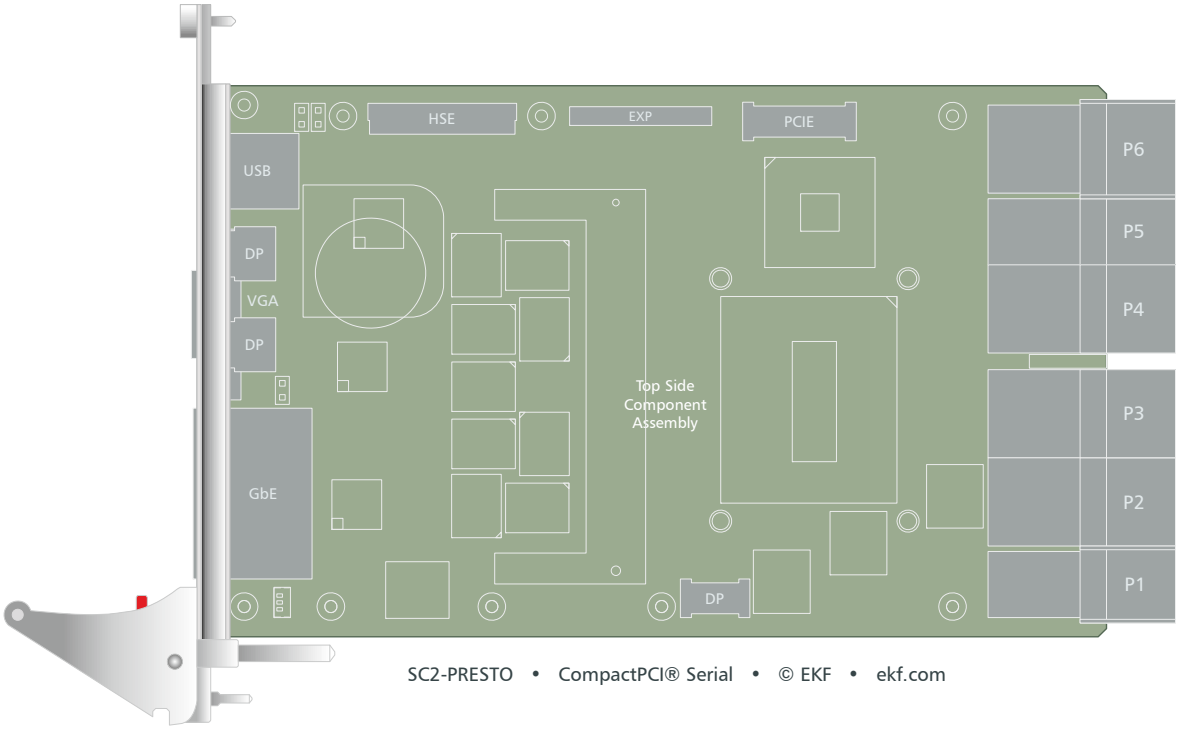


6

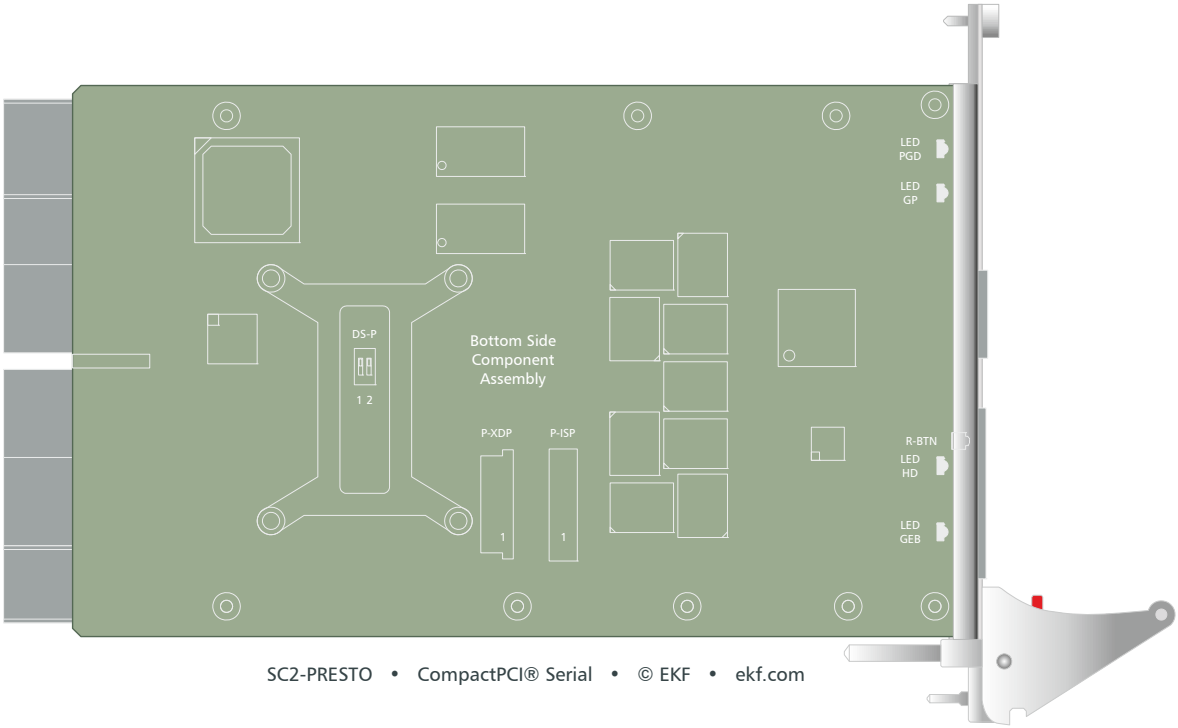


5. Dual-USB 3.0, DisplayPort, 3.5mm stereo audio in/out, 4 x USB 2.0, 2 x RS-232 (COM-C/D)
6. Dual-USB 3.0, DisplayPort, 3.5mm stereo audio in/out, 2 x USB 2.0, 3 x RS-232 (COM-A/C/D)

Major Components Top / Bottom View



SC2-PRESTO • CompactPCI® Serial • © EKF • ekf.com



SC2-PRESTO • CompactPCI® Serial • © EKF • ekf.com

www.ekf.com/s/sc2/img/sc2_draft_2-3.pdf

SC2-PRESTO

Ordering Information

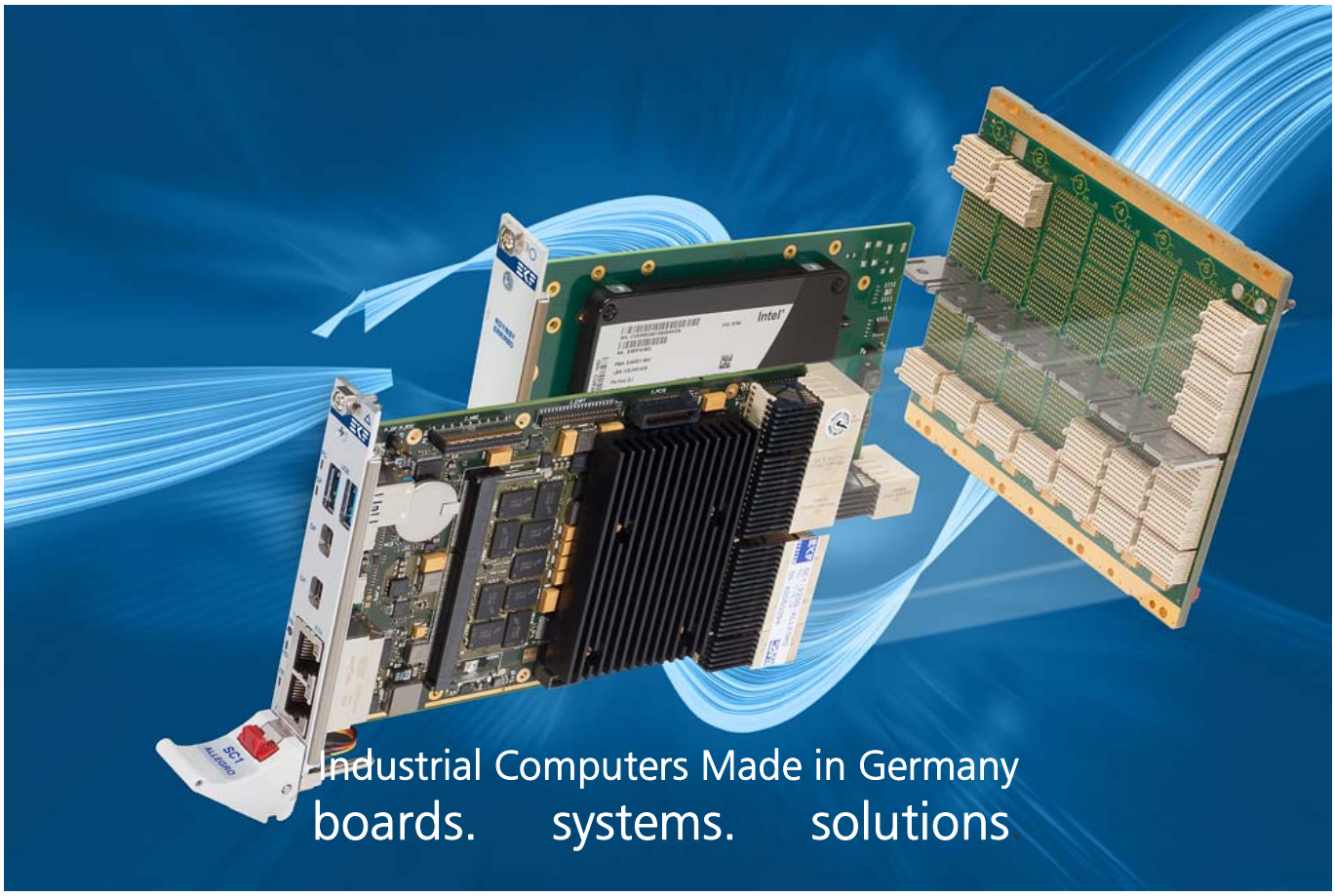
For popular SC2-PRESTO SKUs please refer to www.ekf.com/liste/liste_21.html#SC2

For popular Mezzanine Side Cards please refer to www.ekf.com/liste/liste_20.html#C40

SRS-BLUBOXX Series for up to 4 Peripheral Slot Cards

SRS-4401-RACK for up to 8 Peripheral Slot Cards

Custom Specific Racks 19-Inch



EKF Elektronik GmbH
Philipp-Reis-Str. 4 (Haus 1)
Lilienthalstr. 2 (Haus 2)
59065 HAMM
Germany

Phone +49 (0)2381/6890-0
Fax +49 (0)2381/6890-90
Internet www.ekf.com
E-Mail sales@ekf.com